



National Aeronautics and  
Space Administration  
**Lyndon B. Johnson Space Center**  
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## Space students

Welsh students spend summer at JSC learning space career options. Story on Page 3.



## Mars traveler

The tiny Mars traveler, Sojourner, is being prepared for launch. Photo on Page 4.

# Space News Roundup

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NASA Photo

**STS-79 and Mir-22 astronauts and cosmonauts pose for final group portrait aboard Mir's core module before going their separate ways in Earth orbit. Front row, left to right, are Alexander Kaleri, Jay Apt, John Blaha, Bill Readdy and Shannon Lucid. On the back row are, left to right, Tom Akers, Carl Walz, Valery Korzun and Terry Wilcutt. Note that Blaha, the new American aboard Mir, is wearing the uniform of that crew and Lucid's garment is uniform with the STS-79 astronauts.**

## Shuttle study holds potential for Earth-bound problems

The experiment's name conjures up images of Hollywood and the stars, but it really seeks solutions to many down-to-Earth problems.

It's called MGM because it studies the Mechanics of Granular Materials—he interaction of large numbers of such objects, ranging in size from a grain of sand to a boulder.

For decades, researchers seeking to unravel the behavior of these materials have been hampered by Earth's gravity. However, astronauts aboard *Atlantis* during the past 10 days took advantage of the micro-

gravity environment to study what happens to granular materials under low stress. Working with scientists at Marshall Space Flight Center, *Atlantis*' astronauts examined materials in simulated conditions that typically are present when granular systems deform or collapse.

One common example of MGM is a bag of vacuum-packed coffee. As air presses on the package from the outside, coffee grains are pushed together inside the package and lock each other in place. These collective forces create a brick-like object.

However, once the package is ripped open, releasing the pressures, the coffee's grain assembly becomes very weak and soft, moving about freely—much like a liquid.

Soil and other granular materials behave in much the same way, demonstrating a fundamental aspect of granular mechanics: a single shift in conditions can markedly change the properties of bulk material.

To understand how such granular materials behave under low stresses, *Atlantis*' crew and researchers

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## Lucid bids Mir farewell; Blaha stays

With Shannon Lucid safely aboard the Space Shuttle *Atlantis* and fellow American John Blaha settling in on Mir, the crew of STS-79 broke formation with the Russian space station Monday and headed for home.

Lucid's six-month stay in orbit was scheduled to end Thursday at 188 days and establish her as the American duration record holder and the world's female record holder.

"Dar Vidanya," or goodbye in Russian, were Lucid's last words to her Mir 22 crewmates and Blaha.

"You look great, we'll see you later," Blaha radioed back from Mir.

Lucid was expected to feel weak, nauseous, tired and heavier than normal after returning to Earth's gravity, said Dr. Roger Billica, JSC's chief of medical operations.

Doctors planned a full battery of tests after landing and monitoring of her health for some time, Billica said, but that they aim to get her home with her family as soon as possible.

She said in on-orbit interviews that she is looking forward to cleaning up, sampling some "gooey treats" and sitting in her favorite chair and talking with her family.

"I haven't had a shower since March 22nd," she said "The guys say I don't smell too bad."

Landing was scheduled for 7:13 a.m. CDT Thursday at Kennedy Space Center, but because one of the shuttle's three auxiliary power units failed shortly after *Atlantis*

reached orbit, mission managers were watching weather conditions closely and were ready to land at Edwards Air Force Base, Calif., if necessary. Landing weather rules were tightened because of the failure in a redundant system that provides hydraulic power to the aer-surfaces used to guide the space plane through the atmosphere.

Last week's rendezvous and docking went flawlessly, and within hours of the hatch opening, Blaha and Lucid had formally swapped places aboard Mir. Blaha is scheduled to remain on Mir for four months, until Jerry Linenger arrives to replace him in January.

"What this mission is about is ends and beginnings, and conflicting emotions that affect all of us here," Commander Bill

Readdy said before undocking. "Beginnings" because it begins John's flight...and 'endings' because it ends Shannon's record-setting flight, six months on orbit.

"We'd obviously like to stay. Every time we go past a window and see the Mir, it's an awesome sight. Every time we float down one of the passageways into the hatch and see one of our Russian colleagues working together with a member of our crew, it's a joy to behold."

Readdy flew the orbiter manually through the final 2,000 feet and finished the docking at 10:13 p.m. Wednesday, within seconds of the

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## NASA, JSC adopt streamlined performance appraisal system

JSC is about to implement a new two-level performance appraisal system for civil servants that takes advantage of changes in federal law to focus on objectives and results rather than the review process.

The changes cleared the way for agencies to design their own performance management systems, and NASA has adopted the Employee Performance Communication System. When revamping the system,

NASA sought to link individual performance with organizational goals.

NASA's new system also focuses more on the entire system of performance management, performance planning, career development and employee recognition and less on rating labels and cumbersome documentation requirements.

"JSC has been involved in a number of efforts within the agency to help reshape the performance man-

agement system," JSC Deputy Human Resources Director Greg Hayes said. "We're happy to see that many of the ideas we brought forward are being adopted in this new plan."

The new system, recommended by an agencywide team, still relies on critical job elements to assess employee performance. But, paperwork is significantly reduced and supervisors assign only two rating

levels, "Meets or Exceeds Expectations" or "Unacceptable." Reviews emphasize effective two-way communication rather than procedures.

To further enhance the program, employees will be appraised on their "anniversary" dates — the date they began working at JSC. This change is intended to keep supervisors from having to complete all performance appraisals once a year and allow them to conduct individually tailored

performance assessments and developmental discussions.

"This has less overhead and it is more focused on objectives and results than it is on process. It eliminates a lot of the focus that has been placed on the 'adjective rating' (outstanding, highly successful, etc.) itself and will allow us to put more emphasis on the future development of employees," Hayes explained.

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## Vehicle decal deadline approaching quickly

Employees who have not obtained a new vehicle decal will not be able to gain access to JSC after Monday's deadline without first making a stop at Bldg. 110.

Employees may request a maximum of three decals by presenting a completed JSC Form 1572, Vehicle Registration Record, available at the badge offices in Bldgs. 30, 110, the reception desk in Bldg. 1 and contractor security offices. A valid permanent badge and driver's license will be required to obtain new decals, along with the year, make, model, color, license plate number and state in which the

vehicle is registered.

New decals are available at Bldg. 110 from 7:30 a.m.-5 p.m., Monday-Thursday and from 7:30 a.m.-noon on Friday. Temporary decal passes are issued from 6:30 a.m.-11 p.m. daily at Bldg. 110. After these hours, employees may obtain temporary vehicle passes from the security officer at

Gate 1.

Beginning Oct. 1, current decals will be obsolete. Employees no longer will be able to show a badge or display an obsolete decal to gain entry into JSC. For more information call x32112.



NASA Photo

**STS-79 Mission Specialist Shannon Lucid checks wheat plants growing on the Russian Mir Space Station. Lucid returns to JSC today after spending more than 180 days in space aboard the Russian outpost.**

## Crew returns this afternoon at Hangar 276

The STS-79 crew is scheduled to return home today at Ellington Field, but employees planning to attend need to note that the ceremony will not be at the usual location.

Today's ceremonies will be at the NASA Aircraft Operations Hangar 276, at the south end of the Ellington runway, instead of Hangar 990.

STS-79 Commander Bill Readdy, Pilot Terry Wilcutt, Mission Specialists Jay Apt, Tom Akers, Carl Walz and Shannon Lucid will return to Houston early to mid-afternoon on Friday. Lucid will return with her crewmates, but her participation in the event will depend on her condition. The crew return activities will be carried live on NASA Television. For details, call x36765.